

OREGON'S ERODING COASTLINE:

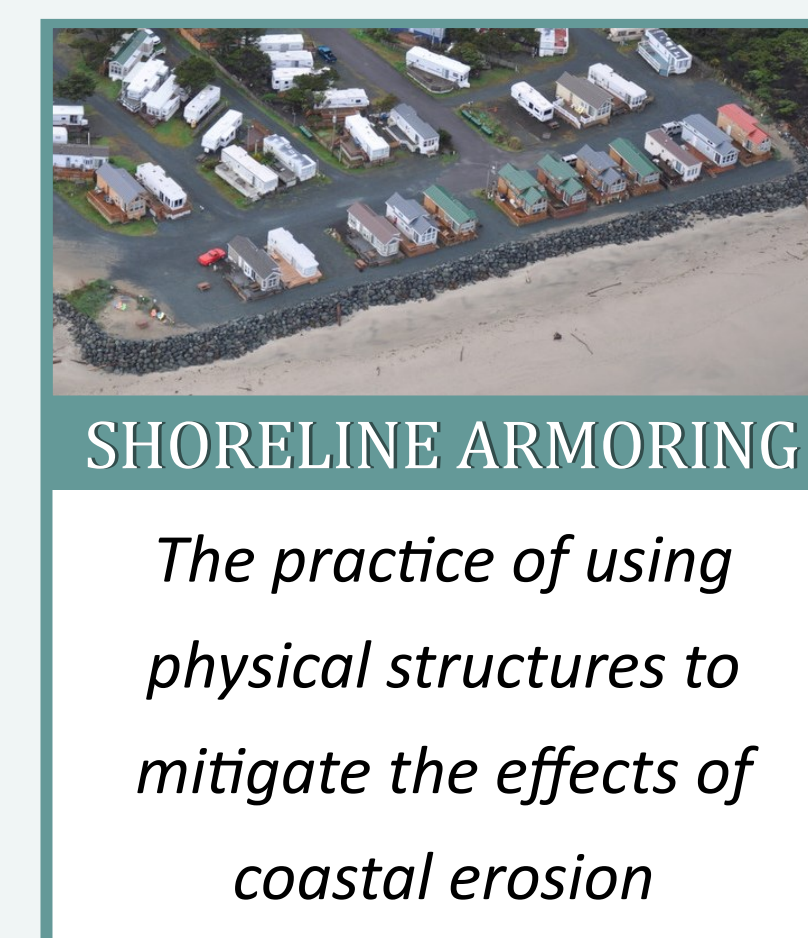
Seeking Solutions in the Face of a Changing Climate

Meg Gardner, Oregon Parks & Recreation Department
and Oregon Coastal Management Program



THE PROBLEM

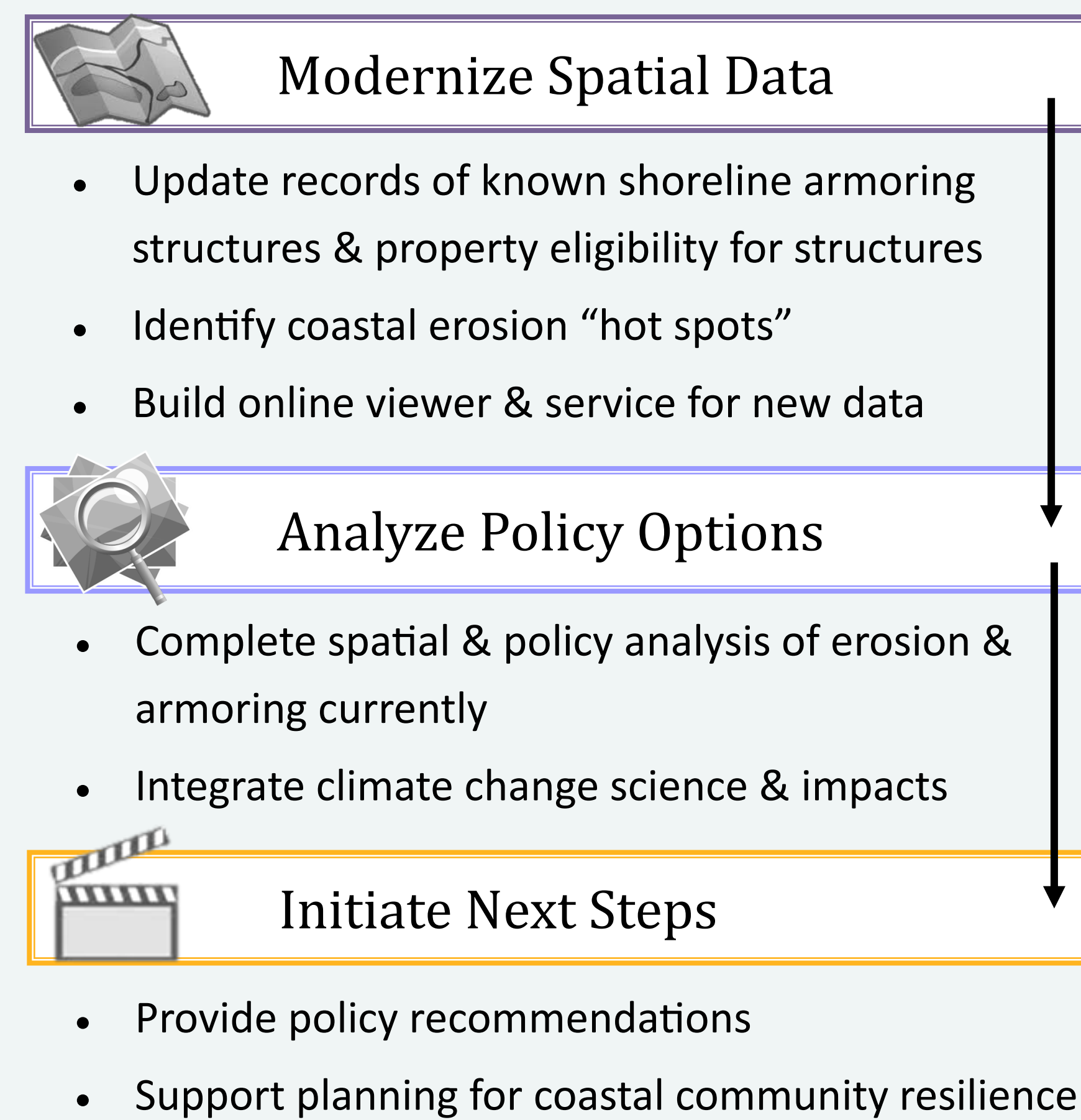
- Shoreline armoring has expanded along the Oregon coast to protect private property from erosion; however, the impacts of armoring are not well known
- Existing information about property eligibility for shoreline armoring permits and the characteristics of shoreline armoring structures is not well maintained or easy to use, making decision-making challenging
- Climate change is predicted to exacerbate coastal erosion
- Climate change factors and other relevant research are not taken into account under the current policy framework regarding shoreline armoring



Purpose of 2013-2015 NOAA Coastal Management Fellowship Project:

To provide a comprehensive assessment, including updated data resources, of shoreline erosion and armoring along the Oregon coast to initiate an informed conversation on potential policy changes to manage increasing coastal erosion hazards.

THE APPROACH

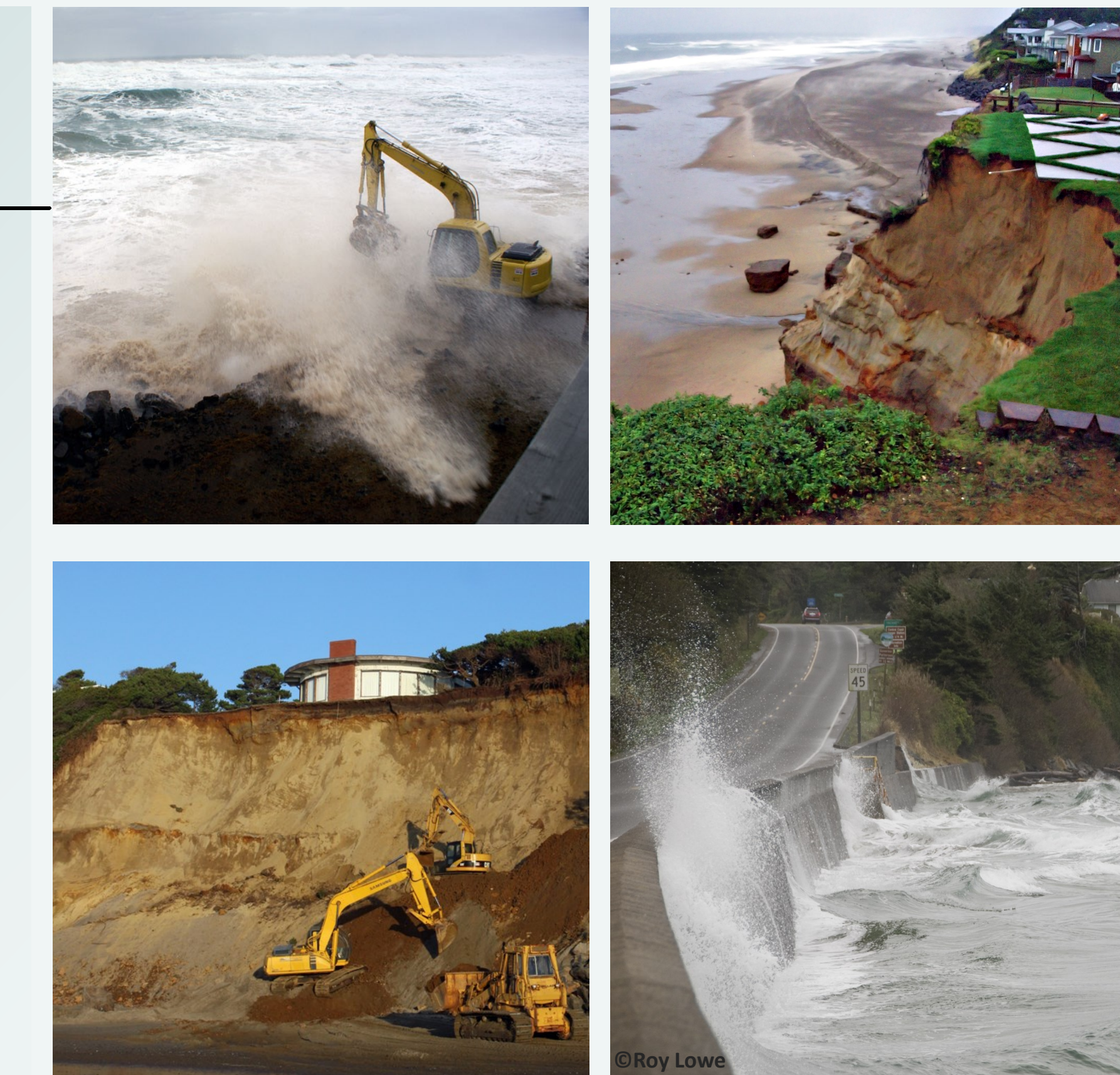


THE FUTURE

Climate change will exacerbate erosion on the Oregon coast, threatening public beaches, infrastructure, and private property.

Factors affecting coastal erosion (predicted to become more extreme):

- Deepwater wave heights
- Sea level rise
- El Nino events
- Rip current embayments
- Astronomical tides
- Storm surge
- Winter storm frequency
- Sediment supply



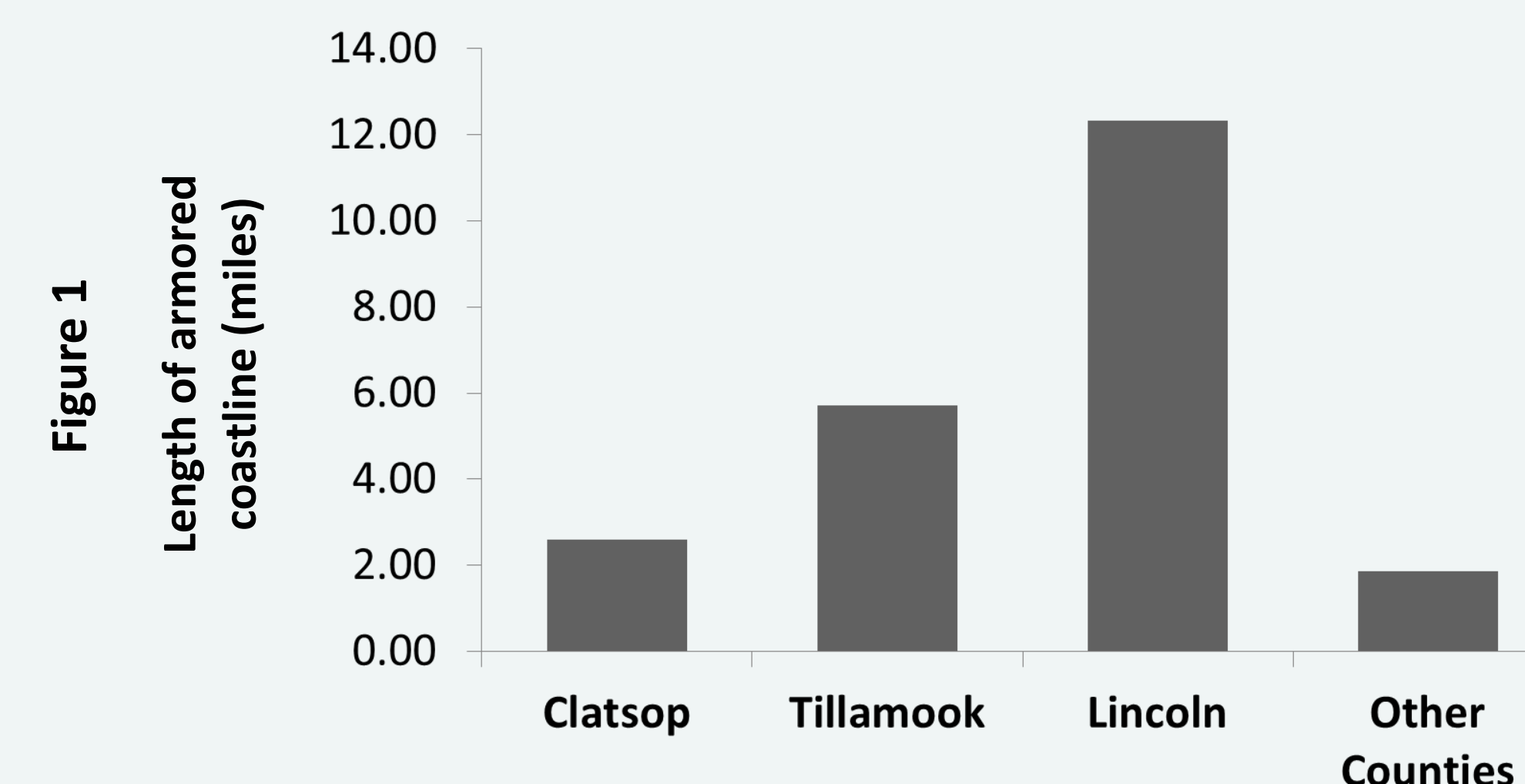
As sea levels rise, total water levels increase and beaches narrow, leading to...

- ⇒ Increase in wave attack & overtopping of armoring structures
- ⇒ Increase in structure slumping and failure
- ⇒ Increase in coastal and backshore flooding
- ⇒ Intensified erosional damage

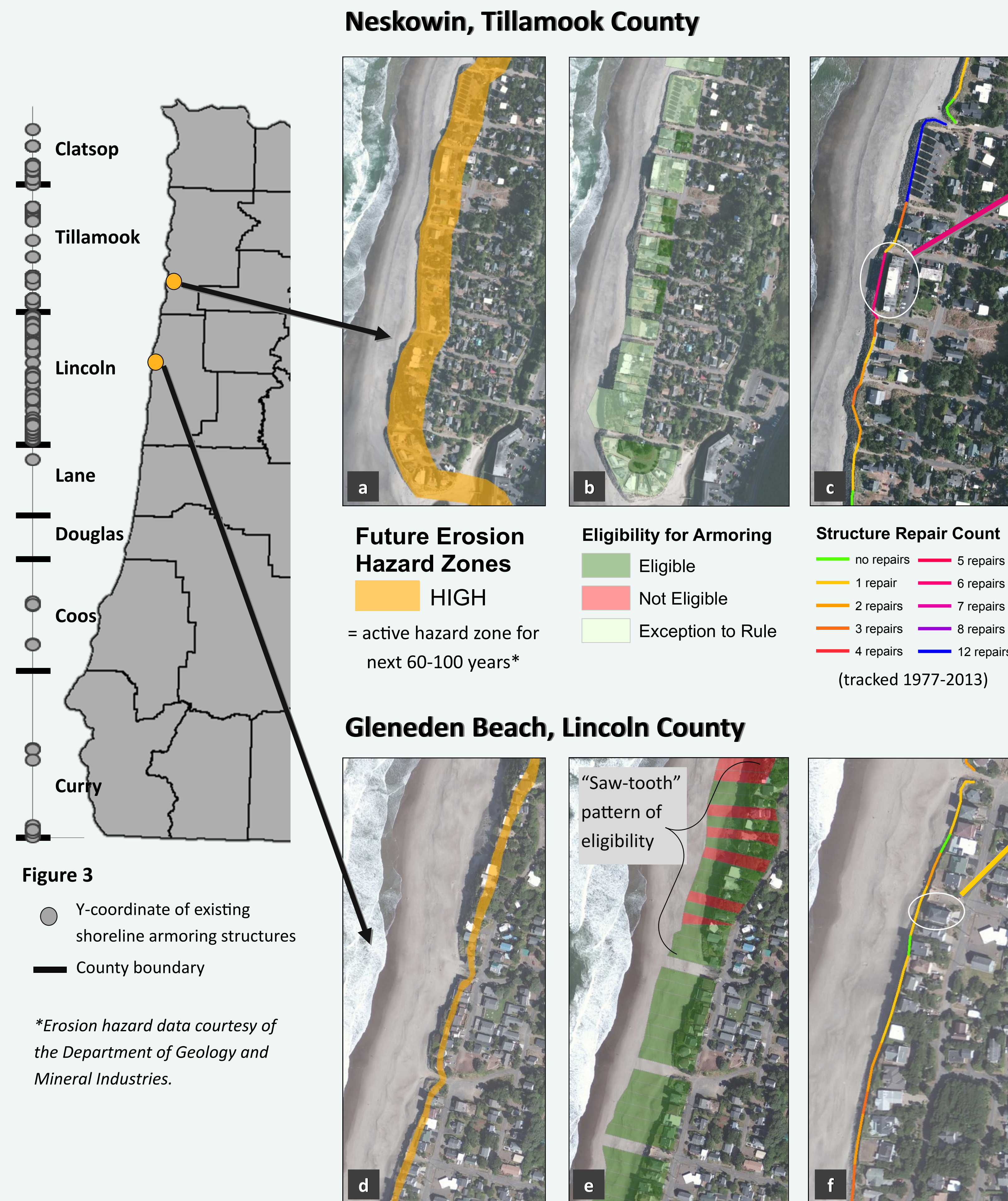
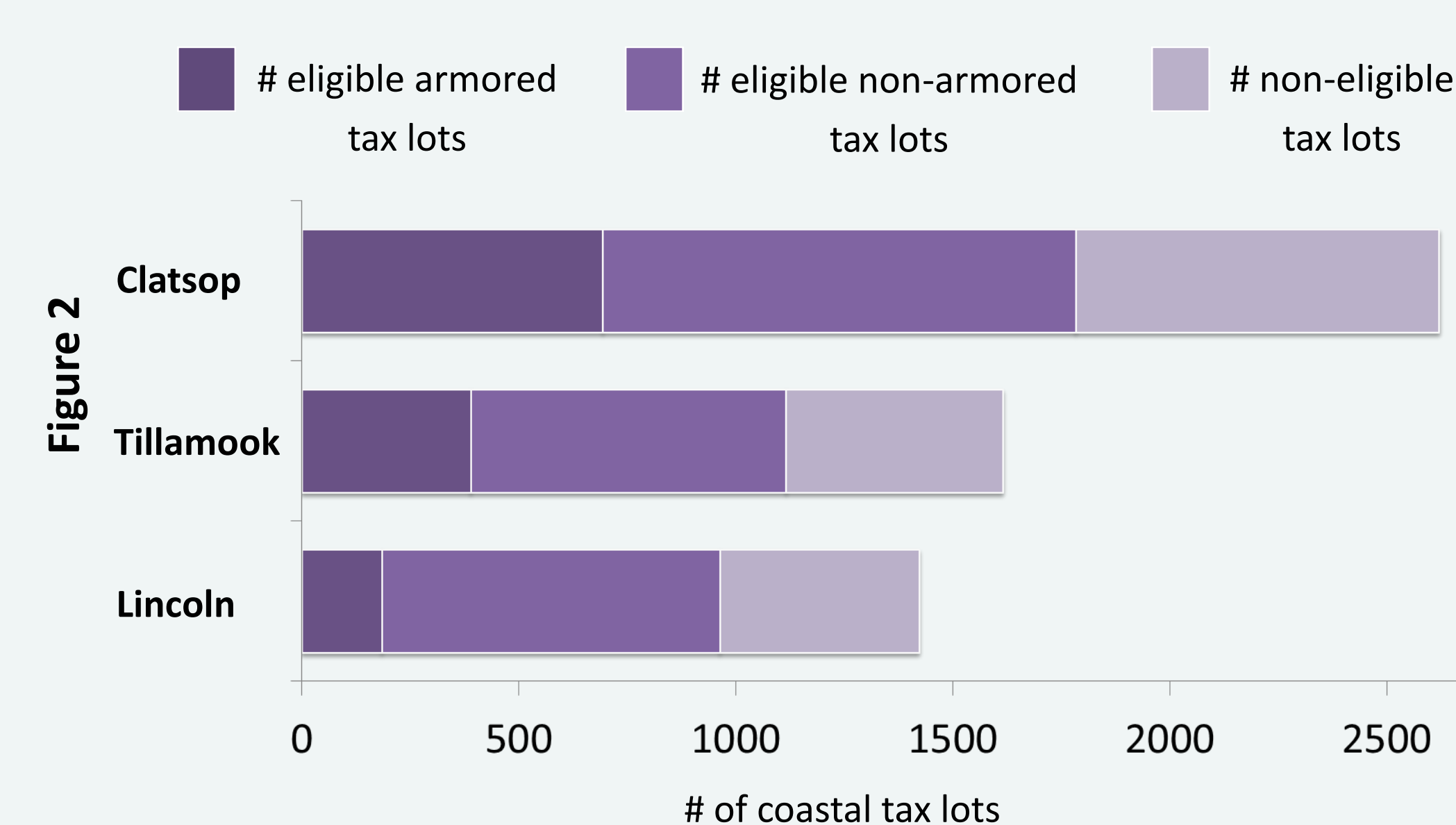
COASTAL EROSION HOT SPOTS

Geospatial Data Updates:

- 92% OF SHORELINE ARMORING OCCURS ALONG THE NORTH CENTRAL COAST (Fig. 1 & 3), in the counties of Clatsop, Tillamook, and Lincoln, which are also the most densely populated and developed areas along the coast
- 22.5 MILES (5.4%) OF COASTLINE IS CURRENTLY ARMORED (Fig. 1; total coast is ~416 miles long)



- A significant percentage of Lincoln (42%), Tillamook (45%), and Clatsop Counties (55%) coastal tax lots eligible to apply for an armoring permit are not yet armored (Fig. 2). These areas account for approximately 43 miles coast wide.
- THESE NON-ARMORED AREAS ARE IMPORTANT TO LOOK TO FOR ALTERNATIVE AND PROACTIVE OPTIONS TO MANAGE EROSION



POLICY REVIEW

Current policies regarding coastal shoreline erosion:

- Only properties developed as of January 1, 1977 are eligible to apply for a shoreline armoring permit
 - Eligibility is determined by local jurisdictions
- Permit approval is granted or denied based on a set of criteria, including an analysis of hazard avoidance, impact assessment of structure and alternatives, and evaluation of public resource impacts
 - Permits are authorized by OR Parks and Recreation Department

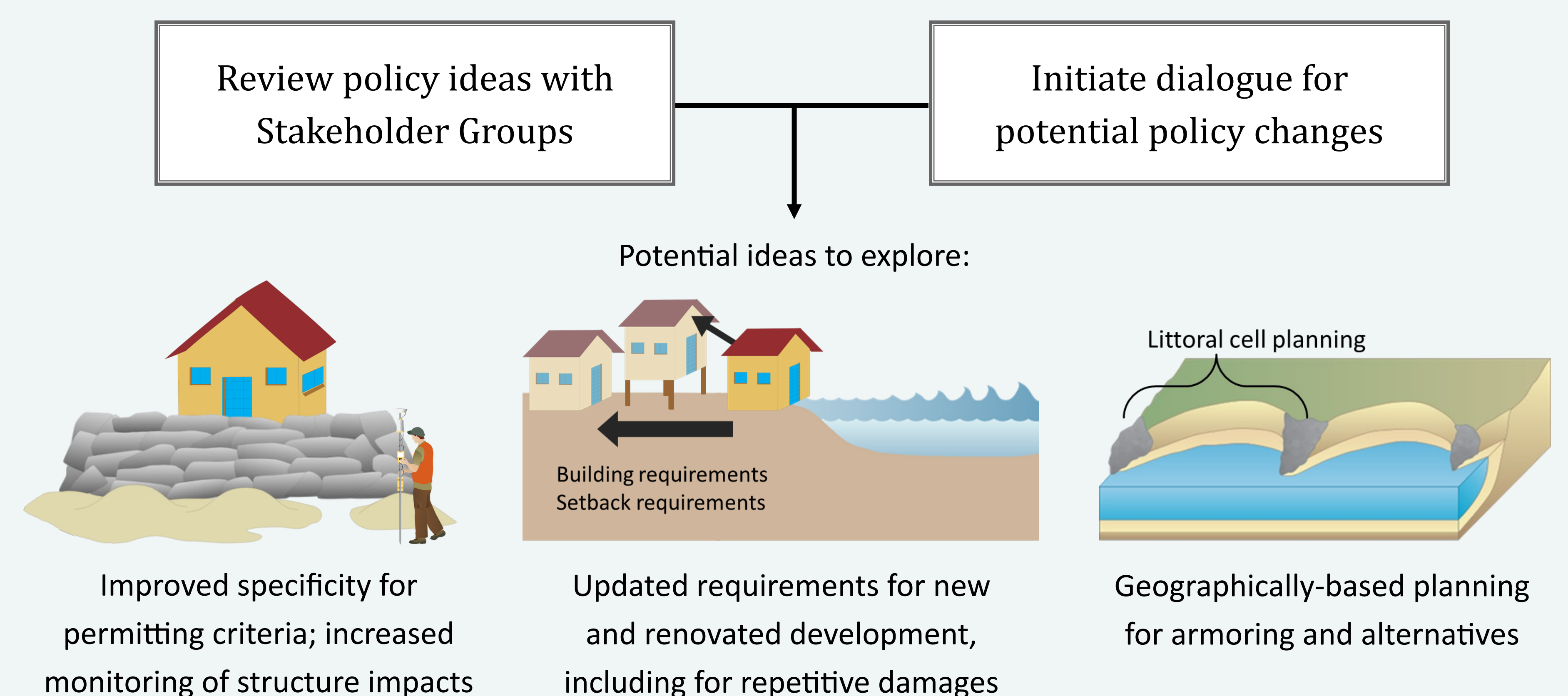
Strengths:

- Current policy limits and discourages shoreline armoring through eligibility requirements
- Eligibility for armoring based on development date can be applied broadly to the entire coast
- Current policy process works well within existing land-use framework

Challenges:

- Eligibility policy does not correspond with geography or physical processes
- Criteria for permitting structures is ambiguous
- Current science is not well integrated into structure design; knowledge gaps on structure impacts remain
- Current policies do not address climate change or future adaptation planning

NEXT STEPS



Graphics from Integration and Application Network, University of Maryland Center for Environmental Science